

WHAT IS CLAIMED IS:

1. An actuator drive apparatus comprising:
- a movable section;
 - a fixed section;
 - 5 an elastic member for connecting said movable section with said fixed section;
 - a magnetic field generation member;
 - a drive coil;
 - a detection coil;
 - 10 a control circuit for applying a drive signal having a rectangular wave to said drive coil, said movable section thereby making a movement relative to said fixed section in the resonance state, said control circuit feeding back an output signal of said detection coil to said drive signal, thereby maintaining said
 - 15 movement of said movable section relative to said fixed section in the resonance state; and
 - a high frequency elimination circuit for eliminating a specific high frequency component of
 - 20 an output signal of said detection coil.
2. The actuator drive apparatus according to claim 1, wherein said high frequency elimination circuit is any one of a low pass filter, a notch filter, and a band pass filter.
- 25 3. The actuator drive apparatus according to claim 2, further comprising a phase compensation circuit for compensating for a change in phase caused

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by said high frequency elimination circuit.

4. The actuator drive apparatus according to claim 2, wherein said high frequency elimination circuit is a low pass filter.

5 5. An actuator drive apparatus comprising:

a movable section;

a fixed section;

an elastic member for connecting said movable section with said fixed section;

10 magnetic field generating means;

a drive coil;

a detection coil;

controlling means for applying a drive signal having a rectangular wave to said drive coil, said movable plate thereby being driven relative to said fixed section in the resonance state, said controlling means thereby feeding back an output signal of said detection coil to said drive signal, a movement of said movable section relative to said fixed section thereby being maintained in the resonance state; and

high frequency eliminating means for eliminating a specific high frequency component of an output signal of said detection coil.

25 6. The actuator drive apparatus according to claim 5, wherein said high frequency eliminating means is any one of a low pass filter, a notch filter, and a band pass filter.

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7. The actuator drive apparatus according to claim 6, further comprising a phase compensating means for compensating for a change in phase caused by said high frequency eliminating means.

5 8. An actuator drive method for resonating and driving an actuator including a movable section, a fixed section, an elastic member for connecting said movable section with said fixed section, a magnetic field generation member, a drive coil, and a detection coil, said actuator drive method comprising:

10 a step of applying a drive signal having a rectangular wave to said drive coil;

15 a step of eliminating a specific high frequency component of an output signal of said detection coil; and

a step of feeding back an output signal from which said specific high frequency component is eliminated to said drive signal.

20 9. The actuator drive method according to claim 8, wherein said step of eliminating said high frequency component transmits only a signal having a frequency component lower than a desired frequency by a low pass filter.

25 10. The actuator drive method according to claim 8, further comprising a step of compensating for a change in phase caused by said step of eliminating said high frequency component.

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